Unit 2 – Plants For Food And Fibre

1.0  Structures and Life Processes

- Seed plants have roots, stems, leaves and either flowers or cones
- Each structure performs a specific function
- Life processes in plants include: Photosynthesis, Transpiration, Gas exchange (cellular respiration)
- Seed plant life cycle includes three stages: Seed stage, Seedling stage, and Adult stage
- Pollination is the joining of pollen and ovary
- Seed plants can also reproduce in ways not involving seeds: Runners, rhizomes, suckers, cuttings and grafting
- Adaptations help plants get what they need from the environment
- Growing conditions varies between and among plants, and can be modified using technology

2.0  Role of Plants to Meet Human Needs

- Plants supply oxygen and food
- Plants are used for food, fibre (to make things), medicine, and other products
- Natural resources vs Managed resources

3.0  Soil

- Minerals and organic matter in different amounts make clay, sandy soil or loam
- Growing and harvesting methods can improve or degrade soil

4.0  Growing and Using Plants – Sustainability

- Selective breeding provides specific desirable traits
- New varieties may lead to environmental problems
- Resistance, loss of species or pollution can occur with long term use of herbicides and pesticides
- Sustainability – balancing out needs with the needs of the environment and the consequences (social and economic)
1.0 Structures and Life Processes

- Seed plants have roots, stems, leaves and either flowers or cones

Identify the structures of a seed plant from the illustration below

![Seed Plant Structures]

- Each structure performs a specific function

Explain the function of the following seed plant structures

<table>
<thead>
<tr>
<th>Structure</th>
<th>Function</th>
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<tbody>
<tr>
<td>Roots</td>
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<td>Stems</td>
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<td>Leaves</td>
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<td>Flowers</td>
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<td>Seeds</td>
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<td>Cones</td>
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</table>
Why do plants produce seeds? 

Life processes in plants

Explain the following life processes of a seed plant:

*Moving water from the roots to the other parts of the plant*

Transpiration

*Capillary Action*

*Moving substances in and out of plant cells*

Diffusion

Osmosis

Active Transport
Making food

Photosynthesis

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Using Food

Gas exchange (cellular respiration)

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Illustrate a word equation for this process (cellular respiration)

Seed plant life cycle includes three stages:

Illustrate the life cycle of a typical seed plant, such as a dandelion.
- **Pollination** is the joining of pollen and ovary

Explain the process of pollination

__________________________________________________________________________________

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What organisms are considered to be pollinators?

__________________________________________________________________________________

What else can be a pollinator?

__________________________________________________________________________________

- Seed plants can also reproduce in ways not involving seeds:

Describe how each of the following types of **vegetative reproduction** can produce new plants

**Runners**

__________________________________________________________________________________

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**Rhizomes**

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**Suckers**

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__________________________________________________________________________________

**Cuttings**

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__________________________________________________________________________________
Adaptations help plants get what they need from the environment.

Illustrate with examples plants that have adapted to the environments described below. (Explain how the adaptation helps the plant to survive in the environment in which it grows.)

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<tr>
<th>Desert Environment</th>
<th>Mountain Region</th>
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<tr>
<th>Open Flat Prairie Environment</th>
<th>Lake</th>
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Growing conditions vary between and among plants, and can be modified using technology.

What are the best growing conditions for plants?
3.0 Role of Plants to Meet Human Needs

- Plants play an essential role in the environment

What specific roles do plants have in our environment?

__________________________________________________________________________________
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- Plants are used for food, fibre (to make things), medicine, and other products

Give examples of how plants are used for the following purposes.

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<tr>
<th>Food</th>
<th>Fibre</th>
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<td>Medicine</td>
<td>Other Products</td>
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Natural resources vs Managed resources

Explain what living resources are.

What human activities caused changes in the supply of living resources.

Who is responsible for managing the living resources we have in Alberta? Canada?

Alberta
Canada

3.0 Soil

Minerals and organic matter in different amounts make clay, sandy soil or loam

What is the difference between organic particles and mineral particles in soil?

Briefly describe the characteristics of each type of soil.

<table>
<thead>
<tr>
<th>Sandy Soil</th>
<th>Clay Soil</th>
<th>Loam Soil</th>
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Growing and harvesting methods can improve or degrade soil

Soil is an important resource in our environment. How are nutrients replaced in the soil when they are used up?

What are some practices that can improve, or cause harm to soil quality?

<table>
<thead>
<tr>
<th>Improving soil quality</th>
<th>Degrading soil quality</th>
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4.0 Growing and Using Plants – Sustainability

Describe three different ways to modify an environment

What technologies have been developed to improve yields?
Selective breeding provides specific desirable traits

Match each of the following terms:

1. Species  _____ A subset of a species
2. Variety  _____ Specific characteristics that distinguish it from other organisms
3. Trait  _____ A group of organisms with similar traits

What is selective breeding?

__________________________________________________________________________________
__________________________________________________________________________________

What is genetic engineering?

__________________________________________________________________________________
__________________________________________________________________________________

Explain what a hybrid is.

__________________________________________________________________________________
__________________________________________________________________________________

What happens when parents with different traits reproduce?
New varieties may lead to environmental problems

Describe an ‘unintended’ consequence when a new variety of plant is produced.

__________________________________________________________________________________
__________________________________________________________________________________

Resistance, loss of species or pollution can occur with long term use of herbicides and pesticides

What are the different kinds of pests that can affect plants?

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Explain why each of the following are used and what ‘unintended’ consequence has occurred as a result of its use.

Herbicides
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Pesticides
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Biological Control
__________________________________________________________________________________
__________________________________________________________________________________
Sustainability – balancing out needs with the needs of the environment and the consequences (social and economic)

‘Unintended’ consequences often happen when we don’t know or don’t think about all of the factors in a particular situation.

Describe a situation where you experienced an ‘unintended consequence’.

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Find an article from your local newspaper that outlines an ‘unintended’ consequence.

Paper:  ______________________________  
Date:  ______________________________  
Section:  ______________________________  
Summary:
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

How does monoculture affect biodiversity?